

Reel unit for use in a fishing rod, holder for a reel unit and fishing rod comprising said reel unit

The invention relates to a reel unit (multi-reel) according to the preamble of claim 1 or 19, to a holder for a reel unit according to claim 25 and to a fishing rod comprising such a reel unit according to claim 28.

Reel units for reeling in and reeling out a fishing line are known in various designs. In particular, reel units are also known in which the reel is provided on the fishing rod so that it can rotate on an axis, which is oriented perpendicular to a longitudinal axis of the plane enclosing the rod. The manual turning of the reel is effected by means of a crank that is provided on the side of a housing and that is connected by a driven gear unit to the reel. The gear unit is provided with a return stop, which can be manually released and when in non-released position enables turning of the reel for the purpose of reeling in the fishing line, but prevents the reel from turning in the opposite direction. If a line guide is present, it points forward.

Normally the reel unit is mounted upright, i.e. on top of the rod. The crank for manual actuation of the reel is located on the right side of the housing. This design was originally taken over from the United States, since many left-handers there hold the rod with the left hand and turn the crank with the right hand. For right-handers, who want to hold the rod with the right hand and turn the crank with the left hand, this design is unsuitable. With a reel mounted upright, the crank would have to be located on the left side of the housing. Therefore, different versions of the reel unit are necessary for left-handers and right-handers. The same applies if the reel unit is to be mounted suspended, i.e. beneath the rod. In this case, different versions are likewise necessary for left-handers and right-handers. If a line guide is provided, it is not possible to use a version intended for upright mounting of the reel for suspended mounting.

The object of the invention is to present a reel unit that enables all possible mounting variants, i.e. both for left-handers and right-handers and for upright or suspended mounting. This object is achieved by means of a reel unit according to claim 1 or claim 19. A holder and a rod are the subject matter of claims 25 and 28, respectively.

The invention enables adjustment of the reel unit by pivoting or turning on an axis parallel or approximately parallel to the axis of the reel. In this way, an existing line guide can be used and

oriented in any mounting situation so that when the reel unit is fastened to the fishing rod, the line guide points forward, i.e. toward the end of the rod facing away from the handle end. The locking direction of an existing return stop can be switched. A further essential advantage of the design according to the invention is that all settings and adjustments can be performed without tools.

The line guide in the invention consists for example of a slide element guided on a guide, which (slide element) comprises at least one line aperture. By turning the guide, the slide element with the line aperture can be adjusted, so that the line can be evenly reeled up onto the reel with the line guide in the respective direction of rotation of the reel.

Further embodiments of the invention are the subject of the dependant claims. The invention is described in more detail below based on exemplary embodiments with reference to the drawings, wherein:

Fig. 1 shows a simplified representation in side view of a fishing rod together with a holder according to the invention and a reel unit or multi-reel according to the invention;

Fig. 2 shows a component drawing of the reel holder in top view;

Fig. 3 shows the reel unit together with the clamping jaws of the reel holder, partially in cross section;

Fig. 4 shows a simplified schematic view in cross section corresponding to the line I – I of Figure 3, in which details of the reel unit are omitted for the sake of a clearer representation;

Fig. 5 shows an enlarged partial view of a sliding guide with a drive shaft (worm shaft) for a line guide;

Fig. 6 shows a partial view of the sliding guide, together with the corresponding line guide in another side view;

Fig. 7 shows a cross section through the guide tube, the drive shaft and the line guide guided

on the guide tube;

Fig. 8 shows a very schematic representation of the reversible return stop of the winch or multi-reel;

Fig. 9-11 show depictions similar to Fig. 5 – 7 of a further embodiment.

In the drawings, 1 designates a fishing pole, on which a winch or reel unit 2 is provided for reeling and unreeling fishing line. In the depiction in Figure 1 the reel unit 2 is suspended on the rod 1, i.e. it is located on the bottom of the rod. Furthermore, the reel unit 2 is designed for a right-hander, i.e. it can be operated with the right hand of the user.

The reel unit 2 consists in the manner known in the art of a spool 4, which for reeling and unreeling the line 3 on a reel axis SA is rotatably mounted in a reel housing 5 or on two housing elements 5.1 and 5.2 forming said reel housing and offset against each other in the reel axis SA. The reel can be driven by means of a crank 6 on the outside of the housing 5.1 and by means of a non-depicted gear unit located in this housing section. The gear unit is equipped with a releasable return stop, which is generally designated 7 in Figure 8 and which in the non-released state enables turning of the hand crank 6 and of the spool 4 for the purpose of reeling up the line 3, but can be released for reeling out the line 3 from the spool 4. Furthermore, the return stop is reversible by means of a rotary knob 8 provided on the outer surface of the housing element 5.1, so that the reel unit 2, in the manner described in more detail below, can be mounted for right-handers optionally on the bottom or top of the rod 1 and for left-handers, likewise optionally on the bottom or top of the rod 1.

Between the two housing elements 5.1 and 5.2, parallel to the reel axis SA, but offset from said axis and therefore radially outside the spool 4, a line guide 9 is provided, which consists in the known manner of an outer guide tube 10, a slide element 11 guided on the guide tube 10, a shaft 12 mounted rotatably in the guide tube and oriented on the same axis as the guide tube, which (shaft) is designed as a "worm shaft" with two crisscrossing spiral-shaped grooves 13 with a large pitch and which can be driven on its end extending into the housing element 5.1 by means of the gear unit and the hand crank. A guide element 14 provided on the slide element 11 engages in the control groove 13 of the shaft 12 and is provided in a retainer 16 formed by an extension of the slide element and can be closed by a cap 15.

On the side opposing the retainer 16 the slide element 11 forms a line eyelet 18 formed on a projection 17. The guide tube 10 can be rotated at least 180° on its axis by means of a locking screw 19 and fixed in the respective position by clamping, so that the line eyelet 18 can optionally be located on either side of a plane that is defined by the axis SA and the axis of the guide tube.

An essential component of the invention is the reel holder generally designated 20 in the drawings, with which the reel unit 2 can be mounted on the rod 1, not only optionally suspended on the bottom or upright on the top, with the crank on the left or right, but also with which the reel unit 2 can be rotated 360° for adjustment on the reel axis SA and clamped in the respective position, in particular so that for every type of mounting of the reel unit 2 on the fishing rod 1 and/or for operation or use by right-handers or left-handers, the line guide 9 is located in the correct position, i.e. on the side of the reel unit 2 facing away from the handle 1.1 of the rod. Adjusting the guide tube 10 accordingly ensures that the line eyelet 18 is in the necessary position in relation to the spool 4 for every adjustment position.

The holder 20 consists of a base element 21, which is depicted in top view in Figure 2 and is manufactured as one piece with a bracket 22, a clamping plate 23 and an arm 24 connecting the bracket 22 and the plate 23. In the depicted embodiment, the base element 21 is symmetrical to a middle plane M, in which also the longitudinal extension of the bracket 22 is located, which in the representation in Figure 2 is located to the side of one longitudinal side of the rectangular plate 23. The holder 20 can be fastened to the rod 1 with the bracket 22, namely in the usual manner for reel units using two retainer rings 25 and 26, each of which forms a matching retainer for one end of the bracket 22 and between which the bracket 22 can be clamped after being inserted into the retainers, so that the base element 21 is then held contiguously with the bracket 22 against the outer surface of the rod 1, and the arm 24 with the plate 23 protrudes from the bracket 22.

The plate 23 is curved on its side facing away from the bracket 22 on an axis that is perpendicular to the middle plane M, namely with a radius of curvature that at least approximately corresponds to the radius of curvature of the housing elements 5.1 and 5.2 on the outside, which have the same diameter and are disk-shaped at least on the outside. The holder consists furthermore of two clamping jaws 27 and 28, which likewise are plate-shaped and slightly curved or convex, again with a radius of curvature that at least approximately

corresponds to the radius of curvature of the outer ring surface of the housing elements 5.1 and 5.2 on their periphery. The two plate-shaped clamping jaws 27 and 28, which in the depicted embodiment are of approximately the same size, are located one above the other in the manner of a packet and are connected with each other by guide or locking pins 29, so that the distance between the two clamping jaws 27 and 28 is variable within certain limits, while the two clamping jaws form a clamping jaw unit 30.

In the middle of one clamping jaw, namely on the clamping jaw 27, the convex side of which is adjacent to the concave side of the clamping jaw 28, there is a threaded bolt 31, which passes through a bore hole 32 in the middle of the clamping jaw 28 and protrudes over the convex side of the clamping jaw 28 facing away from the clamping jaw 27. A female threaded element 33 that can be turned with a hand wheel is provided on the plate 23 of the base element 21. The female threaded element 33 can be used to screw the clamping jaw unit 30 to the concave side of the plate 23 of the base element 21, so that the two clamping jaws 27 and 28 can also be braced against each other. The plate 23 has bore holes 35 for the locking pins 29.

For mounting on the holder 20 the two housing elements 5.1 and 5.2 are provided on their periphery with a ring groove 36 and 37 concentrically enclosing the axis of the housing elements or the reel axis SA, which (grooves) are open toward the inside of the housing elements 5.1 and 5.2, i.e. toward the space formed between said housing elements and accommodating the spool 4. With the reel unit 2 fastened to the holder 20, the clamping jaw 27 designed as a rectangular plate extends with one narrow side into the ring groove 36 in the housing element 5.1 and with the other narrow side into the ring groove 37 in the housing element 5.2. The clamping jaw 28 bears in the area of its two narrow sides against the ring-shaped outer surface of the housing element 5.1 and of the housing element 5.2. After tightening the female threaded element 33, the reel unit 2 is then fixed to the fishing rod 2 by means of the clamping jaw unit 30 and the base element 21 and by means of the holder 20, so that the reel axis SA is oriented perpendicular to a plane enclosing the longitudinal axis of the fishing rod 1 and perpendicular to the middle plane M of the holder 20. By slightly releasing the female threaded element 33, the reel unit 2 can be adjusted by turning on the reel axis SA to the respective desired or required position.

The two ring grooves 36 and 37 are formed for example by a corresponding shaping of the housing elements 5.1 and 5.2 or by a particular shaping of covers of these housing elements, or

by fastening a ring 38 on the outer surface of the disk-shaped housing element, which (ring) comprises one first ring section 38.1 extending in a plane perpendicular to the ring axis and an outer cylindrical ring section 38.2 concentrically enclosing the ring axis. The ring section 38.1 is used to fasten the respective ring 38 on the outer surface of the housing element 5.1 and 5.2. With the reel unit fastened to the fishing rod 1, the ring section 38.2 is held between the two clamping jaws 27 and 28.

Figure 8 shows in a very simplified representation a possible embodiment of the reversible return stop 7. This return stop consists essentially of a ratchet wheel 40 and a catch 41. The catch 41, which is pivot-mounted at 42, comprises two fork arms 41.1 and 41.2, between which the ratchet wheel 40 is located so that in one pivot position the catch 41 with its catch arm 41.1 prevents the ratchet wheel 40 from turning in one direction, i.e. in the depiction of Figure 7 clockwise and allows turning in the other direction, i.e. counter-clockwise, while in the other position, the catch 41 with its catch arm 41.2 prevents the ratchet wheel 40 from turning counter-clockwise and allows it to turn clockwise. On one end 41.3 facing away from the catch arms 41.1 and 41.2 in relation to the pivot point 42, the catch 41 is connected with a rotary link 44 by means of a spring 43. The rotary link 44 is located on an axis on which the rotary knob 8 is also provided. Turning the rotary link 44 or the rotary knob 8 causes the housing-side contact point of the spring 43 to shift so that the catch 41 is moved from one position, in which for example the arm 41.1 is engaged with the ratchet wheel 40, into the other position, in which the arm 41.2 is engaged with the ratchet wheel 40. A further spring 45, by means of the over dead center effect, achieves that the rotary link 44 can assume only two end positions. Of course, other options for reversing the return stop 7 are also possible. The return stop features a release not yet depicted.

Figures 9 – 11 show representations similar to Figures 6 – 8 of a further possible embodiment with a quick-release mechanism for the slide element 11 comprising the line eyelet.

In this embodiment, a guide element 114.1, which is formed by one pin-shaped end of a bolt 114 and is provided on the slide element 11, engages in the control groove 13 of the shaft 12. Said bolt can be moved axially and radially to the shaft 12 on a retainer 115 formed by an extension of the slide element, namely with a section 114.2 with an enlarged cross section. A spring 116 pre-tensions the bolt 114 in the direction of the shaft 12, so that the guide element 114.1 reliably engages in the spiral grooves 13 of the shaft 12. The bolt 114 is provided on one

radially outward end with a handle 114.3. By pulling on said handle 114.3 against the force of the spring 116 the guide element 114.1 can easily be disengaged from the shaft 12, thus enabling movement of the slide element 11 in the longitudinal direction of the guide tube 10. After releasing the handle element 114.3 the guide element 114 in turn catches in one of the crisscrossing spiral grooves 13.

On the side opposing the retainer 115 the slide element forms a projection 117 with the line eyelet 18. To adjust the line eyelet 18 in the axis direction of the guide tube 10 and therefore in the direction of the axis SA, the guide element 114 is disengaged from the shaft 12 by pulling on the handle element 114.3, so that also after repairing a broken fishing line 3, it is possible to continue winding the fishing line 3 closely adjoining the last windings of the line on the spool 4 through corresponding axial adjustment of the line eyelet 18.

The invention was described above based on an exemplary embodiment. It goes without saying that numerous modifications and variations are possible without abandoning the underlying inventive idea upon which the invention is based.

Reference list

- 1 fishing rod
- 2 reel unit
- 3 fishing line
- 4 line spool
- 5 housing
- 5.1,5.2 housing element
- 6 crank
- 7 return stop
- 8 rotary knob for reversing the return stop
- 9 line guide
- 10 guide tube
- 11 slide element
- 12 worm shaft
- 13 groove
- 14 guide element
- 15 cap
- 16 retainer
- 17 projection
- 18 line eyelet
- 19 clamp nut
- 20 holder
- 21 base element
- 22 bracket
- 23 plate
- 24 arm
- 25, 26 retaining ring
- 27, 28 clamping jaws
- 29 locking pin
- 30 clamping jaw unit
- 31 threaded shaft
- 32 bore hole
- 33 female threaded element

34	hand wheel
35	bore hole for locking pin
36, 37	ring groove
38	ring
38.1, 38.2	ring section
40	ratchet wheel
41	catch
41.1, 41.2	catch arm
41.3	end of catch
42	bearing
43	catch spring
44	bearing element for spring 43 or rotary link
45	spring
114	bolt
114.1	guide element
114.2	bolt section
114.3	handle element
115	retainer
116	spring
SA	reel axis
M	middle plane of base element 21